OFFICE OF THE GOVERNOR
ENVIRONMENTAL PROTECTION AGENCY

Rec'd 2/4/92 mg

January 24, 1992

To: Doug Liden, USEPA Region IX, WMD, Permits

From: Sheila Wiegman, ASEPA SW

RE: Draft Cannery Permit Comments

You've done a good job! My comments are the following:

1. The limit and monitoring for total residual chlorine are not warranted. The thaw water from Samoa Packing is from the ASG water system and is recirculated several times to thaw fish before it goes to the DAF. Star-Kist uses harbor water for thawing and this is not chlorinated. The amount of water used for can washing is small in relation to the water used for plant cleaning and fish thawing, which also originates from the ASG water system. The cleaning water and thaw water are mixed with any can cleaning/washing water in the DAF. The cleaning water and thaw water contain significant amounts of nitrogen. Any remaining chlorine at that point would likely be in the form of chloramines which would be oxidized to other nitrogen containing compounds eliminating the chlorine residual. The WQS for chlorine is to prevent overchlorination in wastewater treatment which leads to trihalomethane formation which is carcinogenic and toxic to fish.

2. On page 4 under 1. Proposed Biomonitoring, change quarterly to semiannual.

3. Both ASEQC and ASEPA are referred to in the permit and this may be confusing. I suggest using American Samoa EPA or ASEPA in the document except when referring to the approval of the mixing zone.

4. On page 5, the "Director of Health" is referred to in the fourth parasgraph. This should be American Samoa EPA.

5. I believe Ceriodaphnia dubia is (p. 4) a freshwater species and I am not sure if this is appropriate for a marine discharge.

6. On page 6, it refers to a list of locally available species, but this is not provided nor has it been compiled.

7. On page 6, under D. Receiving Water Quality Monitoring Program, paragraph 2, you should state that the impacts would occur in relation to the discharge.

8. Point E and F should not be monitored in the water quality monitoring program as we discussed.

9. The statement on locating the stations for water quality monitoring on page 7 should be removed.

10. Under dye studies, I suggest it should be dye or tracer studies. The cost of these studies should not be prohibitive.

11. On the Sediment Monitoring Section, I have the following comments:

a. This is only sediment monitoring, not biological, and the first sentence should reflect this.

b. The section you included starting with the fourth paragraph should be deleted, except for oxidation-reduction potential should be added in the sentence on analysis in the second paragraph. Replication is not necessary for these analyses. Priority pollutant and pesticide analysis is not necessary as the ASG has previously completed this.

12. I suggest the coral reef survey be deleted. The section on dye study could state: Should the dye studies reveal to the American Samoa EPA and the USEPA that the reef proximate to the diffuser or any other critical habitat may be impacted, a survey shall be conducted to verify this within six months of the finding. The plan of study for the survey shall be submitted to the American Samoa EPA and USEPA and approved prior to its commencement.

The Department of Marine and Wildlife Resources was consulted on this requirement and responded that it was not necessarily warranted as the reef originally was not pristine and it is difficult to tie reef degradation to the effluent as there are a range of uncontrollable factors which affect the reef. The El Nino effect has recently been tied to coral reef die off. The reefs in American Samoa and much of the South Pacific experienced near depletion due to attack of crown of thorns starfish approximately ten years ago. The reefs are just beginning to recover.

13. In the Statement of Basis,

a. The EQC should be written out as Environmental Quality Commission (EQC).

b.The ASG cannery consent agreement and other elements of the cannery waste disposal scheme are not referred to. Pat Young can assist.

c. Under II. Effluent Limitations, you refer to "desalinization processes"?

d. Under K. Pago Pago Harbor Monitoring Program, you refer to the discharge area as pristine. This is not true as it is surrounded by increasing development and human use and is highly used as a transportation channel. You could say less degraded.

e. On the Harbor-Wide Circulation requirement, the current patterns are known and addressed in a number of documents. It would have been impossible to construct models of the harbor without some knowledge. A circulation study would likely provide us with finer details.

f. The sediment monitoring is not biological monitoring. The main purpose of the monitoring is to determine the character of the sediments in relation to long term high nutrient discharge by the canneries in the harbor and if harbor recovery will be affected by resuspension of the nutrients.

Call me if you have any questions.

CH2M HILL

FAX TRANSMITTAL REQUEST FORM
FOR IMMEDIATE DELIVERY

DATE: January 14, 1992

PROJECT NUMBER: PDX30702.PA.NP

FAX OPERATOR: ________________

TIME SENT: __________ ☐ AM ☐ PM

TO: Pat Young **OFFICE:**

FIRM NAME: USEPA

CITY: San Francisco **STATE:** CA **COUNTRY:** USA

Fax Phone Number: 415-744-1604 **Verification Phone Number:** 7441591

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From: Steve Costa **Office:** SFO **Employee No.:** 5932

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REMARKS:

Pat,

FYI: material sent to Doug Liden re: StarKist Samoa and Samoa Packing TSS and O&G discharges. Please copy Norman Lovelace.

Thanks, Steve

Doug,

We have reviewed the TSS and O&G data for both canneries for the past year (since high-strength waste segregation). The results are not amenable to simple definition of expected maximum values. The attached memorandum summarizes our analysis.

If you have any questions I will be in our Seattle office through Monday, January 20th. The number there is 206-453-5000.

Regards,

Steve

Date Fax Received: ________________ Time: __________ ☐ AM ☐ PM

MEMORANDUM

CH2M HILL

TO: Norman Wei/StarKist Seafood
James Cox/Van Camp Seafood
Doug Liden/USEPA

COPIES: Pat Young/USEPA
Sheila Wiegman/ASEPA

FROM: Steve Costa/SFO

DATE: 10 January 1992

SUBJECT: Frequency Distributions of TSS and O&G Loadings:
Potential Permit Limits

PROJECT: PDX30702.PA.NP

I have had cumulative frequency distributions constructed for the following cases:

RECORDS ANALYZED			
CANNERY	CONSTITUENT	UNITS	NO. OF POINTS
StarKist	Oil & Grease	Pounds/Day	135
StarKist	Oil & Grease	#/1000#SF	135
StarKist	TSS	Pounds/Day	134
StarKist	TSS	#/1000#SF	134
Van Camp	Oil & Grease	Pounds/Day	137
Van Camp	Oil & Grease	#/1000#SF	137
Van Camp	TSS	Pounds/Day	137
Van Camp	TSS	#/1000#SF	137

Note: #/1000#SF = pounds per thousand pounds of sea food.

In each case considered the frequency distribution is a positively skewed function. This means there is a lot of variability in the higher values observed. It is likely that an occasional value will occur that could be higher than the maximum recorded in the data set analyzed. This argues strongly for a safety factor in setting a limit, if violations are not to be expected.

What limits are proposed?
Justification?

jcnpes\tsso&g.mem

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REMARKS: PAT- NORMAN WEI ASKED THAT I MAKE SURE YOU GOT A COPY OF THESE MTG NOTES. PLEASE COPY NORMAN LOVELACE AS WELL. THANKS

Steve

CH2M HILL San Francisco Office 6425 Christie Avenue, Suite 500 Emeryville, CA 94608 415.652.2426

D R A F T M E E T I N G N O T E S [FOR REVIEW]

Subject: Joint Cannery Outfall, Pago Pago, American Samoa NPDES Permit Conditions

Date: 26 December 1991 (Notes prepared 27 Dec 91)

Location EPA Region 9 Offices, San Francisco, CA

Attendees: Doug Liden, U.S. EPA
Sheila Wiegman, American Samoa EPA (phone)
Steve Costa, CH2M HILL
Karen Glatzel, CH2M HILL

Topics: See meeting agenda of discussion items

(1) Sampling Frequency:

Doug explained that the EPA position, expressed at the last meeting (held with N. Wei and J. Cox on December 19, 1991), was that:

- the canneries would be required to sample nutrients twice weekly on production days, or
- if the canneries wanted non-production days to count in the average, at lower loading values, they would be required to sample all seven days of the week.

Steve presented a proposal for sampling on two production days and one non-production day, and using a weighted average to estimate loadings.

Doug explained that, at the present time, the EPA has no idea what the loadings are on non-production days since there are no samples available for those days. There is no reason, for example, to assume Saturday and Sunday would have the same discharge characteristics.

Steve suggested an alternative could be that:

- the canneries sample on production days as before (two days per week), but
- if the canneries wish to have non-production days included in the average calculation, samples would have to be taken on each non-production day to be counted in the average

Using the suggested approach averages would be developed on a weekly basis, for example:

- a week in which two production days were sampled would be averaged as 7 days at the average of the two sampled values
- a week in which two production days and one non-production day were sampled would be averaged as 6 days at the average of the two production day samples and one day at the non-production day sampled values
- a week in which two production days and two non-production days were sampled would be averaged as 5 days at the average of the two production day sampled values, one day each for the two non-production day sampled values
- this approach could be extended to weeks with more than two non-production days, if desired

This approach would provide an opportunity to gain experience with non-production day loading characteristics. The requirement for sampling on each non-production day to be used in the average could be relaxed to sampling on representative non-production days in the future, with the approval of EPA (the process for doing this would need to be described in the permit).

Doug indicated that this proposal would have to be discussed with others at the EPA.

(2) Definition of ZID:

Doug went through the range of alternatives that could be used to determine the best approach to protect organisms from acute toxicity in the mixing zone from un-ionized ammonia (and other toxins). During this discussion Doug outlined the four options that are indicated in the EPA Technical Support Document (TSD) for Water Quality-based Toxins Control (pages 71-72) for defining a mixing zone to meet the requirements of criterion maximum concentration (CMC). The four alternatives in the TSD are:

(1) The CMC is met at the end of the pipe.

(2) The CMC is met within a short distance from the outfall [high rate diffusers, using a ZID defined as 50 times the discharge length, will usually meet this condition].

(3) For cases where a high velocity discharge is not used the CMC should follow the most stringent of the following conditions:

(a) the CMC should be met within 10 percent of the distance from the edge of the mixing zone,

(b) the CMC should be met within a distance 50 times the discharge length in any spatial direction. With a multiport diffuser this requirement must be met for each port, thus ensuring a dilution factor of at least 10 within this distance under all possible conditions.

(c) the CMC should be met within a distance of five times the local water depth in any horizontal direction from any discharge outlet.

4) The discharger provides data showing that a drifting organism would not be exposed to 1-hour average concentrations exceeding the CMC, or would not receive harmful exposure when evaluated by other toxicological analysis.

Doug indicated that alternative 1, is inappropriate since the canneries are applying for a mixing zone and the water quality at the end of pipe does not meet standards. Steve agreed.

Doug thought that alternative 3 was inappropriate for diffuser design to be used for the joint cannery outfall, and would be essentially the same as alternative 2. Steve agreed.

Doug was concerned about application of alternative 4, since there is no bioassay data available. Doug felt that the application of alternative 2 was the most appropriate but was concerned about the CMC being met within a distance of 50 times the discharge length scale.

Steve indicated that the intent of the EPA guidance was to assure that organisms would have a limited exposure time to toxins in effluent discharged. Steve pointed out that the second alternative requires "that the CMC be met within a very short distance from the outfall" during critical or worst case conditions. The number of 50 times the discharge length is given as an example in the EPA Technical Support Document, as a way to "ensure that the CMC is met **within a few minutes under** practically all conditions" (pg 71, col 2, paragraph 5). Steve indicated that he interpreted the

distance of 50 times the discharge length scale is a suggestion not a requirement.

Steve indicated that in the particular case of the joint cannery outfall the modeling results indicate that exposure time in a proposed Zone of Initial Dilution (ZID) of 100 times the discharge length scale has been calculated as less than 30 seconds, with a dilution of 80:1. Since the exposure time is well within the "few minute" limit on exposure times, this proposed ZID would complies with the intent of the CMC guidance and therefore an alternative ZID is warranted within the intent of the guidance.

Steve also indicated that alternative 4 also supports an alternative ZID. The alternative requires support by data. Bioassay data is only one type of a number of examples of the kinds of data that could be applicable. Modeling estimations are also given as applicable types of supporting data.

Steve summarized his interpretation of the guidelines in the TSD indicate that an alternative ZID that would easily provide for the ammonia concerns could be determined under either alternative 2 or 4. EPA could require additional supporting data if necessary. However, meeting the CMC within 50 times the discharge length scale or at the end of the pipe was not realistic for the canneries.

Steve explained that the diffuser could be changed so that the discharge length scale test could be met but that the overall performance of the dilution process would not be as good. Such an approach has no overall advantages.

Karen indicated that the tables used for the calculation of un-ionized ammonia were not necessarily accurate for sea water. This caveat is stated in the tables. Ammonia is probably ionized rapidly in sea water.

Doug indicated that the EPA would have to give this perspective careful consideration as they did not want to be in position of having given a permit with standards that can not be substantiated.

Steve indicated that he understood the concerns but that he felt that this would not be the case since the diffuser is designed to provide for meeting the water quality standards at the edge of the zone of mixing. The model was based on no current with the wastefield transport being based on dispersion alone. With the currents the transport will be better than the model indicates. The model is therefore

very conservative with built-in safety factors and represents worst case conditions.

(3) Temperature Limits

Doug indicated that he did not feel that temperature was going to be a problem because of the length of the outfall.

Sheila questioned whether a 90 °F average limit for temperature could be reliably met since the canneries have been in violation for temperature in the past.

Steve explained that StarKist indicates that temperature is not a problem but that Samoa Packing has a problem occasionally, with temperature exceeding 90 °F. Samoa Packing experiences temperature spikes reaching a few degrees over 90 °F for short times (a few hours).

Steve discussed the problems with reducing temperature in the tropical environment and indicated that an average (90 F) and maximum (say 95 F) would better reflect the situation. He presented calculations (model results) that show that this would expose organisms to higher temperature than ambient for a matter of seconds (30 seconds for temperatures between 95 and 85.1 F).

(4) Flow Limitations

Doug indicated that the EPA was concerned about ways of assuring that the water quality standards are met at the edge of the mixing zone. To address this concern they were considering using a limitation on flow. Doug used the tables in the Zone of Mixing Technical Memorandum to determine that the maximum flows that the model indicated for the canneries was 3.4 mgd.

Steve said he understood the concerns and the EPA's desire to provide as high assurance as possible that the water quality standards are met. Steve explained that the model runs used the 3.4 mgd as indicative of cannery flow conditions today under present operating conditions. The model actually indicates that the mixing zone would be capable of accommodating significantly higher flows and that loadings are the limiting factor. (Model results summarized in the Zone of Mixing Technical Memorandum were discussed by Steve.) Higher flows would reduce initial dilution only somewhat and water quality would be met at the edge of the mixing zone based on calculations summarized in the Tech Memo.

Steve indicated that flows can be increased up to the capacity of the pipe with additional ports being opened at a later date to improve dilution under flow conditions much higher than present conditions. Steve indicated that he believes that flow restrictions would not necessarily provide additional assurance as long as loading limits are appropriately restricted. Under higher flow conditions, for given loadings, the concentrations would decrease and lower initial dilutions would be required to met standards at the edge of the mixing zone.

(5) Harbor Monitoring

Doug and Sheila are working on the harbor monitoring portion of the permit. They welcome Steve's input to the harbor monitoring plan and the ocean monitoring study. Steve emphasized that the canneries very much want to be involved in the development of monitoring plans.

Steve suggested that he review the preliminary draft permit in order to help them on this point. Steve said that in terms of additional water quality stations that he and Sheila had talked about the monitoring and had thought that the historical water quality stations should be maintained for comparison purposes but that a few new stations should be added to monitor the edge of the zone of mixing.

In regards to bioassay, Steve indicated that there is a problem in conducting these tests on Pago Pago waters as there are no protocols or established test organisms. There is also expense involved in conducting the tests, especially when required on a regular basis.

Doug indicated that he was considering proposing that a requirement be made for short-term chronic tests to be conducted on a once-per-year basis using the sea urchin species that is used in Hawaii. He felt this would be appropriate as the water to be tested would probably be shipped to Hawaii, where the organisms are available.

Sheila said she wanted to check with biologists in Pago Pago as some have expressed problems with using the Hawaiian sea urchin as a comparison to the biology of Pago Pago Harbor. Sheila expressed that this might be a good opportunity to develop some site specific protocols.

Doug indicated that there is probably not time to develop protocols for this NPDES permit but that he and Sheila could work out some language for a bioassay testing requirement in the permit. Doug indicated that at a minimum there should

be a once-per-year bioassay requirement in the permit for informational purposes only. He indicated that all NPDES permits now include a requirement for bioassays and that it was unlikely that the bioassay requirement would be dropped entirely from this permit.

(6) Existing Outfall

Sheila stated that the blocking of the existing outfalls would be required but keeping them in place for emergencies was a good idea and should be stipulated under the permits.

Doug indicated that he had no problems with keeping the existing outfall in place as long as they were blocked from being used on a routine basis.

Steve indicated that protocols for opening the existing outfalls under emergency conditions could be included in the permit.

(7) Previous Modeling of Temperature

Doug expressed concern that the models were all run for 85 °F and did not indicate the conditions that would occur at higher effluent temperatures.

Steve used Table 9 - The effects of Temperature on Initial Dilution, pg 16 of the Zone of Mixing Technical Memorandum - to describe the effect of temperature on dilution of the effluent. He pointed out that using higher effluent temperatures would actually increase predicted dilution. The use of 85 °F is actually a worst case condition in terms of model predictions.

(8) TSS Limits

Doug indicated that he located the language that specifically exempted the canneries in Pago Pago from the TSS, Oil and Grease, and pH guidelines established under CFR 40, Part 408.142. Because they were initially exempted more stringent criteria can be applied without the EPA granting a variance to the guidelines. (Doug indicated he will supply a copy of this language, and the citation, to CH2M HILL.)

Doug is considering proposing that the maximum recorded values, after the start of high strength waste segregation, for TSS, Oil and Grease, and pH be used as limits.

Karen expressed concern about basing an absolute maximum limit, well below guidelines and water quality standards on a limited data set that may not include the real maximum to be expected.

Dour indicated that an alternative would be that CH2M HILL conduct an analysis and calculate the distribution of the observed values since high strength waste segregation. The calculation would include the 95th and 99th percentiles of the distribution and a statistical estimate of expected maximum values so that limits to be used would be statistically verified.

Doug indicated that a more stringent limit than the present would be consistent with "anti-backsliding" concepts. Steve indicated that the canneries were not suggesting any relaxation of the standard but rather they were asking that they be left as is.

(9) DO/BOD Monitoring

Steve indicated that the newest generation of the Pago Pago wastefield transport model now has a routine for calculating DO and BOD. A recognized problem with the model is the selection of decay and re-aeration coefficients. He indicated that he can run the model, but that EPA might want to supply the coefficients.

Sheila indicated that the AS Water Quality Standard was that DO could not drop below 70% of saturation or about 5.0 mg/l.

Steve indicated that he had reviewed the historical data and in his judgement there was not going to be a problem with DO or BOD because of the rapid dilution of the effluent in the zone of mixing and the more favorable conditions in the outer harbor. He indicated that he could run the models to verify this point. Doug indicated that DO and BOD were some of his greatest concerns and that he would appreciate it if the model could be used to address his concern.

Steve indicated that there are many variables involved in DO distributions and the model could only indicate trends due to cannery BOD loadings. Many other natural and anthropogenic factors are not included in the model Selection of the coefficients can significantly affect the model results.

Conclusion

After discussing the above points Doug indicated that he would have to talk to others at EPA regarding the issues that were raised during the meeting, especially those regarding the issues of sampling frequency, the sizing of the ZID, and not using flows as a way to regulate the canneries effluent loadings. He expressed that he did not see a problem with the issues concerning temperature, harbor monitoring, or the existing outfall being blocked but left in place to be used in case of emergencies.

Steve indicated that he would get back to Doug on the issue of DO-BOD and the TSS and Oil and Grease limits.

Sheila asked Doug what his schedule was for getting a review draft permit out. Doug indicated that it depends on when he receives the information from Steve and on when the canneries supply him with the split-up of the outfall loadings.